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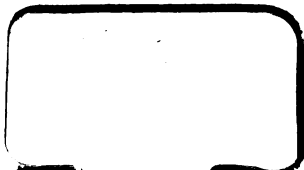


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NAVIGATION

OF THE

STRAITS OF MAGELLAN.

VOYAGE OF THE FRENCH CORVETTE "MUSARD"
CAPT. VALERIEUX TO MONTEVIDEO

UNDER THE COMMAND OF CAPT. VALERIEUX, 1855-1856.
TRANSLATED FROM THE FRENCH BY

JOHN J. HARRIS, U. S. N. (RETIRED) AND WARD.

VOYAGE OF THE FRENCH STEAM FRIGATE "TRIOMPHANTE"
CAPT. ABRAHAM TO THE STRAITS OF

MAGELLAN, 1855-1856.
TRANSLATED FROM THE FRENCH BY

JOHN J. HARRIS, U. S. N. (RETIRED) AND WARD.

WASHINGTON:

GOVERNMENT PRINTING OFFICE:
1857.

THE HYDROGRAPHIC SURVEY
U. S. HYDROGRAPHIC SURVEY

NAVIGATION

STRAITS OF MAGELLAN.

VOYAGE OF THE FRENCH CORVETTE "MESSAGÈR"

UNDER EXPEDITION TO AMERICA

UNDER THE COMMAND OF CAPTAIN J. B. DUMAS, CHIEF OF THE VESSEL
AND CHIEF OF THE EXPEDITION

TRANSLATED BY J. C. DE MEYER, U. S. NAVY

VOYAGE OF THE FRENCH STEAM FRIGATE "THROUQUANT"

UNDER EXPEDITION TO AMERICA

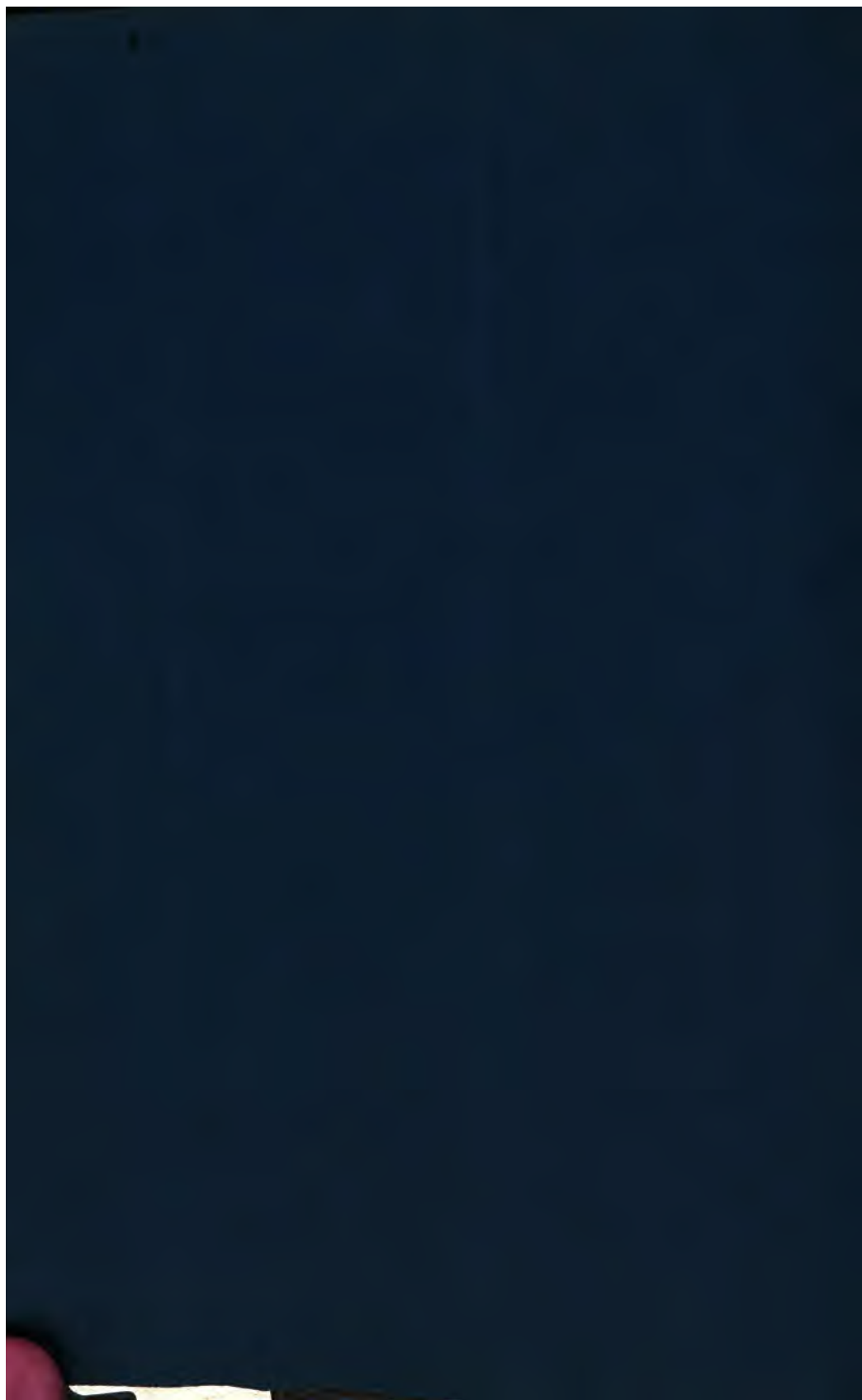
UNDER THE COMMAND OF CAPTAIN J. B. DUMAS, CHIEF OF THE VESSEL
AND CHIEF OF THE EXPEDITION

TRANSLATED BY W. A. LUDLOW, U. S. NAVY

NEW YORK:

JOHN WILEY & SONS, 15 N. ASSATEUT ST.

1885



No. 44—SUPPLEMENT.
U. S. HYDROGRAPHIC OFFICE.

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NAVIGATION

OF THE

STRAITS OF MAGELLAN.

VOYAGE OF THE FRENCH CORVETTE "HUSSARD"
FROM VALPARAISO TO MONTEVIDEO.

REPORT OF CAPTAIN PARIZOT, FRENCH NAVY. FROM THE ANNALES
HYDROGRAPHIQUES, PARIS, 1882.

TRANSLATED BY J. C. P. DE KRAFFT, U. S. NAVY.

VOYAGE OF THE FRENCH STEAM FRIGATE "TRIOMPHANTE"
FROM MONTEVIDEO TO VALPARAISO.

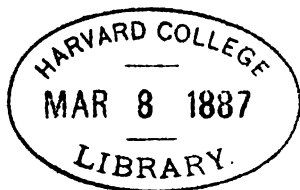
REPORT OF REAR ADMIRAL BROSSARD DE CARTIGNY. FROM THE
ANNALES HYDROGRAPHIQUES, PARIS, 1881.

TRANSLATED BY WM. GIBSON, U. S. NAVY.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1883.

~~VII~~, 78

1888.83



Presented to

Rev. Father,
by the

[The bearings are magnetic unless otherwise stated.]

VOYAGE
OF THE
FRENCH CORVETTE "HUSSARD"
FROM VALPARAISO TO MONTEVIDEO.

EXTRACT FROM A REPORT OF CAPTAIN PARIZOT, FRENCH NAVY.

TRANSLATED BY J. C. P. DE KRAFFT, U. S. N.

At 8 a. m., January 23, 1882, the *Hussard* left Valparaiso, on her return to France, under orders directing her to make the passage by the Straits of Magellan, entering at Cape Pillar, and stopping at Montevideo for provisions and coal.

February 1st, the sky was heavily overcast with fog on the horizon, but not enough to shut out the high lands which we were looking for. At 8 a. m. discovered the Evangelist islands ahead. Straits of Magellan.

These four great rocks, about 360 feet in height, are the best landmark for entering the straits. They lie about twelve miles off the coast, to the northwest of the entrance, and can be approached from the westward or southward and westward with safety; as the currents in this locality set to the southward, it is necessary to make the land to the north of the straits. In clear weather the Evangelists can be seen a distance of 20 miles. On the occasion of our passing we made them out when about 6 or 7 miles distant. The high lands to the eastward, particularly Diana's peak, nearly 4,000 feet high, should be seen before the Evangelists, but the fog shut out from us entirely these mountains. The most southeasterly of the Four Evangelists, called the Sugar Loaf, was made out by us some time after the others. It is more like a pyramid than a sugar-loaf.

From the Evangelists we steered for Cape Pillar, which we only discovered at a distance of 18 miles in consequence of thick weather. It is easily recognized by its abrupt shape, and is overlooked by several much higher summits. All these granitic formations present a heavily seamed and wild aspect.

Cape Pillar.

It may not be inappropriate to correct here an error which tends to give a wrong idea of the appearance of Cape Pillar. Captain Mayne, commanding the *Nassau* and several authors or translators give the impression that cape Pillar or Pillars received its name because of its resemblance to a pillar or a group of pillars. It is true that "pilar" in the Spanish language signifies pillar, but the cape in question bears little resemblance to one or more pillars or columns. After the expedition of Magellan it was known under the names of Formosa and Descado, but its present name was given to it by the officers of the Spanish frigate *Santa Maria de la Cabeza*, in 1540, in honor of Notre Dame del Pilar.

It is not a difficult operation to make the land at Cape Pillar, but somewhat delicate in view of the weather conditions which are likely to exist in that locality, and squalls of wind, heavy sea, cloudy and rainy weather often prevent observations for several days, in which case it is recommended that the navigator intending to pass through the straits should shape such a course as will place him from 120 to 150 miles west of the cape, in order to await favorable conditions and the correct establishment of the ship's position. As long as the heavy NW. winds, which may be expected hereabouts, shall continue to blow and the accompanying thick weather holds on, the ship can be kept in a good position on the port tack; so that when the wind hauls suddenly and violently to the SW., as it usually does, it will be well abaft the beam, and a vessel will be in a good position to head for the land the next day when the clear weather, which always accompanies the south wind, will have given an opportunity to correct the reckoning. It is unnecessary to say that if a vessel finds herself off this coast under favorable conditions of weather and good observations she would head directly for the straits. In all cases it is advisable to head for and make the Evangelists, and the speed should be regulated so as to enter the straits early enough in the day to enable the vessel to reach an anchorage before dark, unless fair weather and moonlight should favor a night passage.

Tuesday anchorage and Port Churrucua.

Tuesday anchorage is about 14 miles, and Port Churrucua about 35 miles, from Cape Pillar. These two anchorages, the entrance of which is easy for steamers, affords secure shelter. The distance from Valparaiso to the straits by the most direct route is 1,200 miles, and the *Hussard* traveled over a distance of 1,410 miles. In the course of the voyage she experienced a current of 130 miles S. 59° E.; in approaching the straits it

was found to be nearly one mile per hour towards the ESE. During these nine days met seventeen vessels bound to the southward.

The *Hussard* was at no time more than 170 miles from the coast, and was on the route of vessels which had just doubled cape Horn, but was farther inshore than vessels bound to the eastward around the cape.

At 11 a. m., February 1st, the *Hussard* entered the straits, approached the southern shore and ran along at a distance of about 3 miles, so as to recognize the points and bays; the weather was tolerably good, sky cloudy and overcast with rain-squalls and occasional fog-banks, good breeze from N NW., hauling to the westward, and moderating with rising barometer. At 1 p. m. passed Tuesday bay; at 3.30 was up to the wide opening which forms the entrance to the bay of Churrucá, which is easily recognized. Notwithstanding the misty and foggy weather, the great glacier, which overlooks the bay, could be distinctly made out, and at times the sharp peak above the glacier could be seen.

With good harbor plans (see U. S. H. O. Plan No. 269) there is nothing to prevent a steamer from finding "Nassau" anchorage at the SW. extremity of the bay, in an admirable and well-sheltered port. The water at a distance from the shore is deep, and the *Hussard* anchored in the SW. angle of the bay in 16 fathoms, sand and shells, about 120 fathoms from the nearest land. There is no better port than Churrucá. In addition to being a good anchorage it is a point at which excellent water and shell-fish can be obtained.

At daylight on the 2d of February the *Hussard* left Churrucá anchorage, and at 4.30 a. m. resumed her course to the southward and eastward in the strait with fine weather, calm and light south-easterly breeze, and barometer still rising.

Capes Providence, Upright, and Monday, with Cordova Tamar island. and Saint Ann's islands, offer excellent bearings by which to fix the position of a vessel at any moment. The contour of many of the prominent points in this portion of the straits is imperfectly determined. Saint Ann's island is not represented correctly in its proportions. From Cape Monday, a vessel bound for the Pacific may dispense with bearings, as it is sufficient to keep Tamar island forward of the starboard beam, taking care to keep in mid-channel, which will give Astrée rock a safe berth.

It was in coming from the Pacific that the brig *Entrepennant* shaped a course too far to the southward and mistook Cordova

strait for Long reach, evidently entering the wide opening to the westward of Cordova island.

In passing Hannant bay at low tide, Black rock, lying a short distance from the north shore, was distinctly seen. Its upper portion of a dark color was uncovered, while the water around it was white as it ordinarily appears over shoals. Back of Hannant bay a short distance inland we sighted mount Knob, easily distinguished by an odd formation not unlike the button on top of a Chinese mandarin's cap. The bearing of mount Knob is useful in finding the entrance to Angosto anchorage.

Angosto anchorage.

Angosto is represented as an excellent shelter, presenting the single drawback of having an entrance not always easily found. To the directions already given we will add a very simple one, which will render it impossible for vessels bound to the northward and westward to miss it, viz: After passing Cormorant bay, leave successively on the port hand two large hills situated on the south shore and about 1,000 feet high. Whatever the weather may be the navigator cannot fail to discover these steep hills whose base plunges into the sea. The south-easternmost of these hills extends in an east and west direction; near the middle of its summit is a marked depression which gives it the appearance of a saddle. The western base of this hill is "false Angosto." The second hill, situated about 2 miles farther to the NW., is a quite sharply formed cone, which prevents its being mistaken for the first hill. Exactly to the west and at the foot of this conical hill (or mountain) is the entrance to the anchorage of Angosto. We had hoped to reach Punta Arenas this day, but the usual west wind failed, and having lost some time in entering Borja bay we did not double Cape Froward until 6 p. m. In the fine weather which we had, the night navigation to Punta Arenas presented no difficulties, for if the *red* light at Punta Arenas is scarcely visible or even extinguished, which is not infrequent, the anchorage can be found by the lead and the bearing of the *white* light which can be relied upon. But it was not desirable to reach that anchorage at 2 a. m. in stemming an opposing current after 7 p. m., which would have necessitated an extra expenditure of coal; we therefore anchored in Saint Nicholas bay at 7 p. m. in 9 fathoms water, soft mud, about 160 fathoms from the beach on the following bearings (true):

St. Nicholas bay.

Sanchez island.....N. 82° E.

Entrance to river Gennes.....N. 14° W.

Point Glascott.....S. 24° W.

Fine weather during the night, and excellent fishing.

February 3d, at 3.30 a. m. got under way from Saint Nicholas bay with fine weather and light breeze from N NE., passed in plain sight of the Chilean settlement at Freshwater bay. At 8.45 abreast of Punta Arena; the square light-house tower ^{Punta Arenas.} to the east of the village is painted red and white and is detached from the dwellings. When on the point of anchoring in the usual anchorage, the Captain of the Port came on board and advised us to seek a berth a little farther to the NE. in order to avoid fouling our anchor on the wreck of the English corvette *Doterel*. The hull of the vessel seemed to have separated in two parts lying about 50 fathoms from each other in 7 fathoms water, and about 650 fathoms S. 17° E. (true) from the light-house. A buoy had been placed over the wreck but it had not remained there.

The *Hussard* anchored on the following bearings (true):

Light-house -----	N. 28° W.
River Point -----	N. 24° E.
Mountain about 150 feet high -----	N. 45° W.
Cross in cemetery -----	N. 80° W.

It is better to anchor a little outside, or to the eastward, of ^{Anchorage.} a line passing through Punta Arenas and River point, which though low shows clearly above the water.

The wooden wharf at Punta Arenas is dilapidated and without steps for landing, so that boats can land best at the beach south of the wharf.

The prevailing winds here are from NW. to SW.; when ^{Winds.} a fresh SE. wind blows communication with the shore is interrupted.

Provisions are scarce at this point, although a moderate ^{Supplies.} supply of English coal can be obtained at about \$16 per ton. Fresh beef can also be obtained. A coal mine is being worked in the neighborhood, and it is believed that other deposits will be discovered; the coal so far discovered is a lignite, which can only be used to advantage by steamers when mixed liberally with good coal. There is a marked and steady increase in the population of Punta Arenas, which now numbers about 13,000 inhabitants, of which between four hundred and five hundred are foreigners.

The advantages to be derived from the introduction of powerful tow-boats have been fully discussed, and it is believed that, but for the war in which Chili has been engaged for the past three years, a system of tug-boats would have been established, as well as a pilot association for the entire straits. When these

shall be in operation, sailing vessels can use the straits with advantage and profit.

At 3 a. m., February 5th, the *Hussard* left Punta Arenas, expecting to pass through the second and first narrows and take a departure from Cape Virgins before night. In getting under way the darkness prevented the beacon on Sandy point from being seen, as well as the buoy marking the shoals southward and eastward of the point; the course was laid so as to give the shoals a safe berth, and at daylight the island of Saint Elizabeth and adjacent lands were ahead.

From this point to the eastward the character of the straits is sensibly different from all the rest; there are no glaciers and no snow at this season of the year. The land is arid, with stunted vegetation, sandy shores and shoals, which necessitate watchfulness and frequent changes of the course; the passages, however, are wide, and the hydrography sufficiently plain and accurate to enable the navigator at all times to mark his position on the chart by means of bearings of points which are easily recognized.

We steered for Tern point in order to pass through Queen channel, keeping about three-fourths of a mile from the shore of Saint Elizabeth island. From Silvester point, which we passed at about half a mile, we steered for Cape Garcia until on the latitude of Cape Saint Vincent. From this point steered NE. in order to pass midway through the second narrows, and enter the bay which separates the second from the first narrows. In passing Susannah cove observed three schooners at anchor which had sought shelter from the fresh NE. wind.

At 8 a. m., abreast of Cape Gregory on the point of which is a wooden beacon or pyramid 56 feet in height with red stripes; from this time the wind steadily increased, the weather became foggy, or rather of a milky appearance, which rendered objects indistinct. Under these circumstances and in consideration of the flood tide which was about making, there would have been no hesitation in seeking an anchorage in Gregory bay, had it offered a shelter from the wind, which was then fresh from NE. All things considered, however, it was decided to increase the speed and keep under way in the wide bay. In order to guard against the dangers located in the northern part of the bay, the course was changed more to the eastward so as to make out clearly on the eastern shore of the bay the black hill and hillocks in its vicinity, which can be safely approached. From these the course was shaped by the land

towards Baxa point, easily recognized by a pyramid on its highest point about three-fourths of a mile inland. In this manner, notwithstanding the foggy weather it was easy to enter the first narrows at noon, keeping as close as was safe to the southern shore, in order to avoid the strength of the flood tide. On the edge of the plateau, a bank extending from Espora point to Point Anegada, we discovered a red buoy surmounted by a red ball, which we supposed was the buoy which had been placed to mark Narrow bank, and on coming up with that bank we discovered that the buoy had gone adrift. We may add that we did not see any of the buoys which mark the various banks of the strait; all had been swept away with the exception of those perhaps on Santa Marta and Triton banks, which the fog would have prevented our seeing at the distance at which they were passed.

The sight of the points marking the entrance to the first narrows and the beacon on the highest point of Direction Hill, and a little later mount Aymond and the beacon on Possession cape, enabled us to fix with accuracy the position of the vessel.

At 4 p. m., having passed Narrow and Orange banks and finding a heavy sea with increasing wind from NE. and falling barometer, it became necessary to seek an anchorage which would afford a shelter from the bad weather. At 5 p. m. anchored in the NE. part of Possession bay, between Cape Possession and the spot named on the chart "Stonewall anchorage," in $7\frac{1}{2}$ fathoms water at low tide and 15 fathoms at high tide, bottom sand and gravel, at three miles from the coast and $1\frac{1}{2}$ miles from the banks, which are uncovered at low tide. The current of the ebb tide setting to the east and the flood to the west with a velocity exceeding one knot, three days after full moon.

The wind continued strong from NE. for 24 hours, during which time the barometer did not fall below 29.46. In the afternoon of February 6th the wind moderated, and in the evening hauled suddenly to the SW., the barometer rising gradually to 29.76. We remained at anchor during the night of the 6th in order to give time for the heavy swell outside to subside, and at 3.30 a. m. February 7th got under way with a fine breeze from SW. and good weather, the ebb tide favoring us about 2 knots per hour. Made all square sail, and drew the fires under one boiler. For a short time we mistook for Cape Virgins a sharply-defined eminence situated a little to the west of the cape, but after a while Cape Virgins, which is

lower than the eminence referred to and inclined in a gentle slope towards the sea, was made out more to the right. At 6.30 passed the meridian of the cape, and having passed outside of Nassau rock took a departure at 8 a. m. from the latitude of the cape.

The passage of the Straits of Magellan which measures on the *track* 320 miles from ocean to ocean, was made in one day and nineteen hours running time, and the distance indicated by the log during the run was 323 miles, including the detours in entering into the anchorages of Churrucua, Borja, Saint Nicholas, Punta Arenas, and Possession bay, which detours represent a distance of 26 miles. From which it results that the current had favored us 23 miles during the time we were under way.

During the six days we were in the straits the temperature was very moderate, sometimes rather warm during the day. The thermometer ranged between 45° and 66° .

From the Straits of Magellan to Montevideo.

After leaving the straits we had every reason to expect a continuance of the SW. wind, particularly as it had just been preceded by strong winds from NE., and in consequence the engine was stopped. At 10 a. m. lost sight of the cliffs which extend about 15 miles to the north of Cape Virgins. The wind moderated rapidly, hauling to the NW.; in the afternoon it settled at NE. At 4 p. m. furled all sail and started the engine with steam on one boiler. On the 8th and 9th February stopped the engine twice and made sail to take advantage of light westerly winds, but after a few hours furled sails and started the engines, the wind either falling entirely or hauling to the northward—fine weather and high barometer. Under these conditions we had reached a point a little to the north of the Gulf of Saint George and about 150 miles from the land, when finding it necessary to economize coal, the engine was stopped and the vessel put under sail on the starboard tack with wind at N NE.

February 12th we were in latitude 44° S., longitude $63^{\circ} 40'$ W., with indications of a change of wind, which came out at NW., but speedily hauled back to N., and settled down again at N NE. and freshening. At dark the vessel was under fore stay-sail, main try-sail and close reefed main-top-sail. At 10 p. m. blowing heavy, with incessant lightning. At 11 the wind hauled to NW. and moderated; at midnight, calm. The

barometer was very little influenced by these sudden changes of weather. In the afternoon of the 13th the wind settled again from the north; furled sails and went ahead under steam. Great numbers of sea birds and porpoises in sight.

February 14th and 15th, under moderate steam, with but rare opportunities to use fore-and-aft sails or stay-sails. In the morning of the 16th, latitude 37° S., longitude $55^{\circ} 40'$ W., light breeze from SE., which was the first fair wind since leaving the straits. During the night got steam on both boilers in order to reach Montevideo the next day.

The *Hussard* was ten days accomplishing the 1,200 miles of distance from Cape Virgins to Maldonado, while the distance actually run was 1,275 miles, and having had a current of 55 miles N. 35 E.; we kept at from 60 to 150 miles from the coast closing in with or leaving the land, as it was necessary to take advantage of the sails when they could be used. In keeping near land we had the advantage of smoother water. The most marked feature of this passage was the persistency of the north wind, which prevailed with the exception of a few hours of westerly puffs. These conditions are very correctly announced in the excellent wind-charts of Mr. Brandt.

At daylight, February 17th, made the Sugar Loaf, situated west of Maldonado; after determining the position of the vessel, shaped a course to pass between Flores island and English bank, having a current of one knot with us. At 3 p.m. moored off Montevideo in 19 feet water, muddy bottom, on the following bearings (true):

Cathedral ----- S. 76° E.

Cerro point ----- S. 87° W.

Point Theresa ----- S. 45° E.

About 800 yards' length from the landing.

During the eight days passed at this anchorage the depth of water under various circumstances of wind and weather varied about seven feet.

[The bearings and courses, except where otherwise expressed, are evidently magnetic.]

V O Y A G E
OF THE
FRENCH STEAM FRIGATE "TRIOMPHANTE"
FROM MONTEVIDEO TO VALPARAISO.

REPORT OF REAR ADMIRAL BROSSARD DE CORBIGNY.

(17th December, 1880—17th January, 1881.)

TRANSLATED BY WM. GIBSON, U. S. N.

The *Triomphante* sailed from Montevideo the 18th of December, 1880, with fine weather, calm, barometer 29.89, the engine at 50 revolutions with half fires, which gave a speed of less than 8 knots. After passing in sight of the light-ship on English bank kept off towards the SE. to leave to starboard all banks at the entrance of the river; when these were passed, steered S. 15° W. until Point Medano had passed out of sight; then S. 40° W., as recommended in the instructions, to the middle of the gulf of St. George.

Cape Corrientes. The 19th, at 8 p. m., we passed within 30 miles of Cape Corrientes, but as it was in the night we did not see it.

Point Delgada. On the morning of the 20th, the light breeze we had had since leaving having become stronger, the engine was stopped and we made sail off Point Delgada, going from 3 to 4 knots, when the breeze freshened, experiencing dead calm during a part of the night.

Gulf of St. George. In spite of my desire to economize coal for our passage through the straits, I found myself obliged to fire up on one boiler in order to secure a speed of 5 or 6 knots when the breeze should fail us, proceeding thus at slow speed, sometimes under sail, sometimes under steam, without other change of weather than a few squalls in crossing the gulf of St. George. From this point to Cape Virgins the barometer began to oscillate between 29.72 and 29.25, without apparent cause, the weather being calm with occasional cats-paws and alternations of overcast sky and sunshine.

The 28th of December, 1880, being at 8 p. m. about 60 miles N. 30° E. of Cape Virgins, I regulated the course and speed so as to make land by daylight, which at this season begins at 3 o'clock in the morning.

As we approached the land the weather became foggy and Cape Virgins. squally from SW. At 2.30 a. m. we started two boilers; at daybreak we could recognize without difficulty Cape Virgins enveloped in clouds, bearing S. 65° W., at a distance of about 15 miles. We steered then on the course recommended to the south of Nassau rock, and we could easily follow it by aid of the ordinary bearings, in spite of the squalls of wind and rain which, from time to time, hid everything from view.

Half an hour after noon we anchored in Possession bay in Possession bay. 21 fathoms water, bottom of gray sand, on the following bearings (true):

Mount Aymond bearing-----N. 54° W.

Direction hill-----S. 71° W.

Pyramid on Point Possession-----E.

The 29th got under way at 3.45 a. m. to make the entrance to the first narrows with the commencement of tide. As far as Punta Arenas the average velocity of the current was not over 2 knots.

Lusitania Rock.—In the basin which separates the two nar- Lusitania rock. rows, I left the buoy on Triton bank at least a mile to the southward to avoid the doubtful Lusitania rock, which some English and French charts show in different positions, but which has been omitted from the latest English editions after fruitless efforts in search of it.

We saw, in passing Gregory bay, an *estancia*, belonging to Cattle ranche. a Frenchman, which he uses, it is said, for raising cattle.

After leaving the second narrows we could easily see the 10-foot bank. buoy on the (3 meters) 10-foot bank, situated N NE. from the island of St. Martha.

We followed the ordinary route in hugging point Sylvester St. Elizabeth chan- and running along St. Elizabeth island for a short distance. nel. In this channel there is no range to steer by, and one is obliged to go by sight. Floating sea-weed is met with, and the eddies are troublesome to a large ship that must avoid the Walker banks. When the weather is good this is no great inconvenience, but in dark and rainy weather the new channel would seem preferable, and does not sensibly lengthen the route.

The island of St. Elizabeth is now leased by the Chilian St. Elizabeth isl'd. government to the English consul at Punta Arenas, who raises

there herds of cattle ; but this does not prevent sea birds from still coming there to lay their eggs. As we skirted this island all the *anfractuosities* of its eastern slope were filled with swans, whose plumage specked the sunshine with white points.

Estancia, Laredo bay.

Upon the summit of St. Elizabeth island is still standing a signal-pole, which has doubtless served in hydrographic work. In Laredo bay we saw in process of construction an *estancia* or ranche similar to that on Cape Gregory.

Punta Arenas.

Immediately after passing this bay the white roofs of Punta Arenas below Sandy point became visible.

Sandy point anchorage.

We anchored in 14 fathoms, sand and broken shells, the light-house bearing N. 27° W. (true), and the cross of the cemetery N. 67° W. (true.) From this position the coal-hulk bore S. 84° W. The Captain of the Port at Punta Arenas advised shifting our berth more to the west the better to profit from the shelter of the land from the NW. winds.

We landed at Punta Arenas upon a wooden wharf, in bad condition, belonging to an old coal-mining company.

Coal.

To-day, I think, we can be sure of finding a certain quantity of coal at Punta Arenas, in case of need ; but the high price of it when of good quality, and the difficulty of getting it on board, do not make this locality a desirable point for replenishing a supply of coal for ships passing the straits.

The straits presenting no further difficulty as far as Cape Forward, I gave the order to start at one o'clock in the morning, on the night 1-2d January, with three boilers, as a provision for the bad weather we might find on the other side of the cape.

English reach.

Fine weather, with a light breeze, continued as far as Cape Holland, which we passed at 8.50 a. m. Then we were assailed by sudden squalls of wind and rain at very close intervals, completely concealing the view. We ascended with great difficulty the English reach, the whole length of it having the current with us ; at noon we crossed the eddies at the entrance of Crooked reach, and half an hour later anchored in Borja bay in 16 fathoms water, having the point west of the high land S. 58° W., and the point east of great Borja south (true).

This anchorage is excellent and easy to make ; though appearing narrow on account of the high land which shelters it, it can accommodate many ships of large size ; it does not seem necessary, moreover, to moor there for a brief stay, as the breezes from NW. make themselves sufficiently felt to keep the ship head to wind. The next day, the 3d, we got under way at early daylight.

I desired to make a long stretch to avoid if possible anchoring on the left shore of the strait at ports Augusto or Churrucca, from whose high lands heavy squalls descend; I wished equally to avoid port Tamar, which is surrounded by rocks that have occasioned more than one disaster. The weather, which had been relatively good, moderated yet more when we were clear of Long reach. At 10 o'clock Tamar island was NE. of us, and we rounded it to make Smyth channel. The wind had veered to the north, the rain had ceased, and the weather become clear; the south coast could be distinctly seen as far as Cape Pillar; it would have been a favorable moment to enter directly into the Pacific.

The French view of Port Augusto appeared to us much more faithful than the English plan, and enabled us to recognize the entrance without the possibility of error, although the mountain to the left, upon which the cascade is seen, so resembles that which occupies the same position at the false port, which precedes the true one coming from the east, that it might be mistaken for it.

Having easily recognized the Fairway islands and mount Joy, we were soon on the way towards Scholl bay; but I profited by the weather to continue as far as Long island, where we dropped anchor in 7 fathoms of water, bottom gravel and broken shells, on the following bearings (true):

Isthmus island	S. 55° E.
Pemberton	S. 43° W.
North of Summer islet	West.
The buoy of the pass	N. 43° W.

I had preferred this anchorage, which is highly recommended by the native pilots, to that of Isthmus bay, which is aside from the route, and is said to be of irregular bottom and to be strewn with rocks.

The 4th, at 5 a. m., got under way for Porto Bueno. In crossing the west branch of Smyth channel, squalls from NW., with fogs, made us at one time fear that we would lose the view for clearing Victory pass; but the horizon cleared from the moment we doubled Amazon point, and the Bessel rocks could be seen in good time projecting from Brinkley island. Their bright yellow vegetation shone against that of the island, and they were seen stretching off to the east as they came in range of the SE. point of the island.

The rocky island of Catalina, resembling the Bessel islets, appeared at the extremity of Ross point, which is low com-

pared with the neighboring land. When point Osprey was passed, the three black Clayne rocks could be distinguished, scarcely showing above water; we passed between them and Brinkley without the least difficulty.

Newton island.

At 9 o'clock, rounding the north point of Newton island to make Sarmiento channel, we were assailed by a series of squalls of wind and heavy rain which hid everything from view, and we were obliged to steer by compass. In general we had similar weather every time we had approached a channel communicating directly with the sea, where it probably blew strong from NW., and the weather always improved as soon as these were passed.

Islands along
Staines' penin-
sula.

All the islands left to starboard, along the coast of Staines' peninsula, are scarcely indicated on the chart. They appear to be more numerous; some appear to be but rocks; the most part were low, but there were also high ones. That which precedes Double peak, unless the appearance be that of the land against which it is seen, seems to have two summits which, in rainy weather, so frequent in these latitudes, may be taken for Double peak itself. This last island appears to have an orientation different from that on the chart, for these two summits were in range with one another when bearing east.

Mayne harbor.

The weather became more moderate when we reached the shelter of Vancouver, and permitted a good view of the entrance to Mayne harbor, which seemed too narrow for a large ship to venture there, and, at 3.30 p. m., we anchored in the outer roads of Puerto Bueno in 15 fathoms water, bottom of sand, gravel, and broken shells. Bearings as follows (true):

S. point of Hoskins' island ----- N. 73° W.

Point Hankin ----- S. 19° E.

Puerto Bueno.

Bueno Puerto is very well named; it is a well-sheltered anchorage, with sufficient depth of water and easy of access for a large ship.

Inner harbor in-
convenient for
large vessels.

If the ordinary anchorage should be found occupied, a convenient one offers east of Pounds island in from 11 to 12 fathoms water; the inner harbor is only suitable to small vessels which can be easily handled, because of the bend and narrowness of the passage which leads to it.

Guia narrows.

The 5th, at 3.15, early daylight, we got under way in spite of the uncertain appearance of the weather, and we went on rapidly in order to clear the Guia narrows before the rainy weather should become too thick. We coasted along point Europa so as to clear the shoal that is placed off it without

seeing any indications of it. Guia narrows is a narrow gorge with no sudden bend in the shore line nor submerged rocks; its passage presents no difficulty to an observing eye and a ship that steers well.

Upon reaching Innocents channel, the bad weather which had been threatening us all morning burst upon us in squalls of wind and rain, blowing out of West channel with extreme violence, making us lose 3 knots of our speed and lasting as far as Conception channel, which we did not reach until 8.30; the weather seeming to be equally bad in the neighborhood of Trinity channel, I decided to seek shelter in Molyneux harbor, to which access is easier, and we anchored there at 10 o'clock, in 22 fathoms water, fine sand, on the following bearings (true):

Vaudreuil island ----- N. 57° W.

The Fawn buoy ----- South.

This buoy is seen a considerable distance when one is heading for the harbor; as for the shoal to the south, it was impossible to see the kelp on it, either on entering or leaving, and prudence suggested hugging the western shore of the entrance, which is safe, until the north and south line of bearing of point St. Michel is passed.

In Molyneux harbor, which it appears communicates with West channel, the currents were quite appreciable, and there is little shelter from the NW. winds unless you are well within the cove. It is nevertheless an excellent occasional anchorage for large vessels.

During the 5th, the entire day, and until the 6th, squalls of rain and hail came at close intervals, but the breeze hauled little by little to the NW., and the barometer rising, I determined to get under way at 11.30 a. m. in order to gain Grappler harbor before night.

In Icy reach we rarely met with any drifting ice. At this season Eyre sound appeared completely clear; the summits of Saumarez island still retained a few traces of snow; those of Wellington island, which are higher, were still covered on the declivities sheltered from the north winds; the streams, swollen by the rains and the melting snow, channeled in silver threads down the dark mountain sides, sufficiently announced the advanced stage of the thaw.

At 6 o'clock we arrived at port Grappler, where we found that an English yacht (the *Wanderer*) already occupied the middle of the anchorage, so we were obliged to anchor on the

edge of the plateau in 16 fathoms water on the following bearings (true):

Diamond island.....N. 33° E.

Astrée point.....S. 24° W.

Recognition of the port.

It is hardly possible to make a mistake in entering this port if a little care is taken in estimating the road traveled over; the islet at the entrance, it is true, is recognized with difficulty; but the cascade is very visible, and the valley in which the bay is situated is sharply defined in the solid mass of the mountain; and when you keep the north side a little aboard, point Aymon juts out into the middle of the channel. Above all it is well to know that Point Astrée is comparatively low and covered with vegetation.

Dragging anchor.

During the night, the wind blowing in squalls, from the bottom of the bay we dragged our anchor, having been able to veer very little chain, and we dragged into the entrance passage. Nothing detaining us at this anchorage, preparation was made and we started at daylight for Eden harbor, where I intended by all means to await a favorable moment for entering the English narrows.

Eden harbor.

At 6.50 we entered, with tolerable weather, into Indian reach, running along the left shore until Crossover island was rounded, then along the right shore from the Hope islands to point Clarke. The weather had become gloomy, and the bearing of Eden island, known by its remarkable tree, could not be recognized for going into the Southern pass. Under such circumstances it is much easier to come to anchor in the East pass; this we did by passing to the north of Dulcie and Eden islands, and at 8.30 we had anchored in 17 fathoms water, the point east of Eve bearing south, the nearest middle point, S. 78° E., and the north point of Eden S. 51° E.

Reconnaissance of English narrows.

As soon as we were all snug, the steam-launch was ordered to reconnoiter the English narrows.

In spite of torrents of rain, which lessened the force of the wind, we were able easily to recognize all the points which mark the channel from the two rocks west of Kitt island to Kosmos buoy.

Difficulty in getting under way from Eden harbor.

The next morning (8th January) I gave orders to get under way at 5.30, in order to reach the narrows towards 7 o'clock at the time of high water. We were at the period of neap tide, but, on the other hand, the rain had ceased and was succeeded by superb weather, with calm; no more favorable conditions could have been desired. In getting under

way it required some time to turn in this narrow basin; we were finally able to cast to port, pass west and south of Eden island, and shape a course for the north channel.

The delay in leaving the harbor did not admit of our arrival at Mid island channel until 7 instead of 8 o'clock; eddies appeared in the southern entrance and in the channel itself; the current from the north still had a little force.

The *Triomphante*, whose length is 269 feet and draught 24.5 feet, turned readily at a speed of 8 knots; the precaution I had taken to reconnoiter the ground in advance, following in that the example of Admiral Cloué, gave a confidence that we would not otherwise have felt in this narrow strait, with the rain and wind so prevalent in these latitudes.

I had at first intended to pass the night at Hall harbor, but, the weather still being fine and promising, I determined to keep up the speed of 10 knots for the rest of the day, in order to leave the channels the same day; at 4 o'clock we were at Sombrero pass; at 4.30 I took my departure at the Ayanton islands, and steered N. 60° W. to double *Tres Montes*, 15 miles distant, with a light breeze from the west and a rough sea, which abated when we stood off to sea.

By the morning of the 9th we had reached the meridian of 77° 40'; I then stood to the north, hauling the fires to take advantage of a light breeze from SSE. to south, which soon changed to SW., then to NW. and freshened, accompanied with rain and dark weather during the next 24 hours.

The next day, the 10th, having attained 42° of latitude, the weather rapidly grew better; the wind hauled little by little to the SW. while moderating, and took us to the 39th parallel, where it was replaced by the light SSW. monsoon which prevails at this season on the coast of Chili.

The 12th, at noon, we sighted Mocha, 15 miles to the east, and the next day, at 10.45 a. m., we anchored at Lota, passing north of Santa Maria islands. From Mocha to Santa Maria we had 12 miles of northerly current in 18 hours.

Leaving Lota on the evening of the 15th January, overcast and foggy weather, we had only calms or light airs from NNE. to NNW. until off Valparaiso, although we were 30 miles from land.

The 17th, at 5.30 p. m., we anchored at Valparaiso in 31 fathoms water, muddy bottom.

English narrows,
Mid-island channel.

Advantage of a
previous reconnaissance.

Messier channel,
Gulf of Peñas.

SSW. monsoon.

Lota harbor.

Calm weather.

Arrival at Valparaíso.

